SUPREME COURT, U. S.

Office-Supreme Court, U.S.
FILED
JAN 18 1966
JOHN F. DAVIS, CLERK

Supreme Court of the United States

OCTOBER TERM, 1965

No. 905

GEORGE C. TIBBETTS,
PETITIONER,

v.

HUGH S. KNOWLES,
RESPONDENT.

PETITION FOR A WRIT OF CERTIORARI TO THE UNITED STATES COURT OF CUSTOMS AND PATENT APPEALS

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Blanchard Press, Inc., Boston, Mass. — Law Printers

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Petitioner, George C. Tibbetts, prays that a writ of certiorari issue to review the judgment of the United States Court of Customs and Patent Appeals, entered in the above-identified case on June 24, 1965.

Citation to Opinion Below

The opinion of the United States Court of Customs and Patent Appeals, printed in Appendix A hereto, is reported in 146 USPQ 59 and 347 F. 2d 591.

Jurisdiction

After judgment of the United States Court of Customs and Patent Appeals on June 24, 1965, rehearing was denied on October 12, 1965. The jurisdiction of this Court is invoked under 28 U.S.C. Section 1256.

Question Presented

Can an abstruse electroacoustic invention be reduced to practice without causing it to perform its intended function?

Statute Involved

U.S.C., Title 35, Section 102(g) provides:

A person shall be entitled to a patent unless—

> (g) before the applicant's invention thereof the invention was made in this country by another who had not abandoned, suppressed, or concealed it. In determining priority of invention there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other.

Statement

The United States Court of Customs and Patent Appeals had jurisdiction of the case under U.S.C., Title 28, Section 1542.

The controversy involves an interference between a patent application of George C. Tibbetts and a patent application of Hugh S. Knowles to determine who made the invention first and is therefore entitled to a patent on the invention.

The invention relates to a transducer, which is a device for converting mechanical energy into electrical energy and vice versa, its chief use being in hearing-aid microphones and receivers. The basic device, sometimes called a motor, comprises an armature in the form of a reed having one end fixed and the other end vibrating in an air gap between two magnetic poles of opposite polarity, the armature being surrounded by an electric coil. For its intended use the armature is connected to a diaphragm of a microphone or receiver. In the case of a microphone sound waves impinging on the diaphragm cause the armature to vibrate and it in turn generates electrical impulses in the coil. In the case of a receiver electrical impulses corresponding to sound waves are transmitted through the coil to cause the armature to vibrate and the vibrating armature actuates the diaphragm to reproduce the sound.

For maximum sensitivity the armature must be magnetically balanced in the aforesaid air gap (Cronk, R98, Q240). "This is a method of adjusting the flux in a way that you have little or no flux through the reed. We call that magnetic centering" (Pratt, R198, Q43). As stated in the specification of the Knowles application involved in this interference (R16) this magnetic centering was ". . . to obtain distortion-free reproduction in a receiver . . ." and to permit ". . . maximum signal-current amplitudes without distortion . . ." that is, without distortion of sound. Thus the function of the magnetic balancing is not only high sensitivity but also high fidelity of sound reproduction.

The invention of the interference involves one or more tabs at the fixed end of the armature. By bending a tab

toward one of the aforesaid poles the magnetic reluctance in the space between the armature and pole is varied to produce the aforesaid magnetic balancing. Count 3 of the interference (R337) is limited to a T-shaped armature, the arms of the T constituting the tabs.

The Patent Office awarded priority to Tibbetts on the ground that Knowles had not reduced his invention to practice prior to Tibbetts' application. The Court of Customs and Patent Appeals reversed the Patent Office on the ground that Knowles reduced the invention to practice in 1953 by building and testing so-called AH motors.

According to testimony some of these tests were made by Knowles, the applicant, as described on pages 144 et seq. of the Transcript of Record, hereinafter referred to as the Knowles tests, and some were made by Ulrich as described on pages 180 et seq. of the Transcript of Record, hereinafter referred to as Ulrich tests.

Knowles Tests

As admitted by a Knowles witness (Cronk) the intended use of the invention is to balance the armature magnetically (R96, Q222).

In adjusting a motor the procedure was to balance the motor physically by deforming the armature through a hole in the bulkhead and then attach the diaphragm. However a further adjustment was needed to compensate for any unbalancing effect after connecting the diaphragm. A Knowles witness testified (R95):

Q. 211: How did you physically balance the system?

A. We physically balanced the system initially for the gross effect. This was handled by going through either the small hole in the bulkhead or through the

clearance slot arrangement at the back and actually inelastically deforming the reed so the active end of the reed found the magnetic center.

Q. 212: This was evident on a testing apparatus that showed the maximum impedance?

A. Yes, an impedance meter, basically.

Q. 213: Now why would you want a further adjustment if you have that adjustment?

A. Mainly to allow yourself, once the diaphragm was placed on the unit, if the unit for some reason—the motor for some reason had drifted off this initial setting, there was no way to readjust it without removing the diaphragm, which was quite expensive a procedure. We wanted the magnetic balance back here to allow a final trimming up of the system.

Knowles also testified that the adjusting means were "for the purpose of doing something that might have to be done after the diaphragm had been applied, but before it was placed in the case" (R159, Q133). In the Knowles tests no diaphragm was applied.

In the Knowles tests no attempt was made to balance the armature magnetically by reluctance adjustment after the armature had been attached to a diaphragm. First he balanced the armature by the "opposed pin centering technique" and then, without attaching the armature to a diaphragm or anything else, manipulated the projecting corners of the armature to find out how much the armature could be thrown off balance (R pp. 148 and 149). Thus on page 149 Knowles testified:

So this unit had been pre-adjusted by the pin technique to bring the reed tip into approximate mechanical center.

The purpose of my test, therefore, was to find out

the shift in the magnetic balance that could be achieved by operating one of the tabs at the fixed or clamped end of the reed.

This was just the finding of an effect, without any demonstration that he could do anything useful with it. From the fact that a balanced armature unattached to anything can be thrown off balance by tab adjustment, it does not follow that an armature can be rebalanced by tab adjustment after it has been thrown off balance by attachment to a diaphragm. As explained on page 3 of this petition one function of the invention is to obtain maximum signal amplitudes without distortion, that is with high fidelity, and tests without a diaphragm could of course indicate nothing with respect to fidelity of reproduction of sound.

Thus the Knowles tests were frankly admitted to be laboratory tests purely and simply, and not a use of the invention, either actual use or simulating actual use.

The tests inherently produced unbalanced devices and the record is silent as to when Knowles first produced permanently balanced devices, either with or without a diaphragm.

Ulrich Tests

The Ulrich tests are described on pages 180 et seq. of the Transcript of Record. In these tests the armatures were connected to diaphragms but there is no evidence that these tests involved any use of the adjusting means constituting the essence of the invention. Indeed the brief for Knowles before the Court of Customs and Patent Appeals, copy of which has been certified along with the transcript of the record, admits on page 4 that Ulrich "did not know what the T-reed was for". All he could say was the microphone "responded" (R182, Q30). This did not establish whether

the adjusting means would perform its intended function, or in fact whether the armature even had adjusting means (R97, Q229, R115, Q491).

Argument

As held by this Court in *Corona Co.* v. *Dovan Corp.*, 276 U.S. 358 at page 383:

> A machine is reduced to practice when it is assembled, adjusted and used.

Before the decision of the CCPA in the present case it was well established that a reduction to practice must involve either an actual use of the invention for its intended purpose *(Kear* v. *Roder,* 47 USPQ 458, 28 CCPA 774, 115 F.2d 810) or a use of the invention under conditions closely simulating conditions of actual use *(Paivinen* v. *Sands,* 144 USPQ 1, 52 CCPA 906, 339 F.2d 217). In the latter case the invention involved a circuit intended to operate "computational or logical systems", or "logical block", or a "shift register", each having an "input core" to which the circuit was to be connected, this input core being referred to as the "load" of the circuit. However in the reduction to practice the circuit was connected to an "output core" and the court found:

> "It appears that an output core was selected as the load so as to simulate closely the possible practical uses for the circuit."

Admittedly Knowles' tests did not involve an actual use or a use closely simulating actual use because the armature was not connected to a diaphragm or used for any other purpose.

In *Kear* v. *Roder* at page 813 (115 F.2d 810) the Court of Customs and Patent Appeals approved the statement by the Board of Appeals that the witnesses

> "may have been fully convinced that the system would necessarily function properly in actual operation and it may be that the information they possessed justified this belief. We are of the opinion, however, that the record does not show what would occur in actual use".

Again in *Elmore* v. *Schmitt*, 27 CCPA, 278 F.2d 510, 1960, the Court of Customs and Patent Appeals held that even though laboratory tests justify a prediction of success they do not constitute reduction to practice unless they accurately simulate actual operating conditions:

> "No doubt the laboratory tests and their results were of an encouraging nature and may have justified a prediction that the invention would probably be successful if and when it was put to some specific practical use; but reduction to practice requires more than that. What is required is not a mere basis for prediction but an actual demonstration.

As held by the Patent Office Board of Patent Interferences in *Ferguson* v. *Lansing*, 145 USPQ 721, February and May 1965:

> Clearly the laboratory tests did not accurately reproduce the operating conditions that would be encountered in any practical use of the invention and did not show that the invention worked as it is intended to work in its practical contemplated use. They, therefore, do not prove actual reduction to practice even though the results were of an encouraging nature

and may have justified a prediction that the invention would probably be successful if and when it was put to practical use.

In the present case no attempt was made to test the usefulness of adjusting means under "operating conditions that would be encountered in any practical use of the invention and did not show that the invention worked as it is intended to work in its practical contemplated use".

According to the Knowles testimony, the purpose of the adjusting means was to adjust the motor after the diaphragm had been attached, and in the 1953 tests there is no evidence that the corner of the armature was bent after a diaphragm had been attached. Knowles bent corners of armatures in motors that had no diaphragm, to see how much this bending would throw the armatures off magnetic balance. He did not bend a tab to bring the armature to magnetic balance after the decentering effect of applying the diaphragm. Whether bending the corner of the armature of the 1953 motor was capable of compensating for the unbalancing occurring after the diaphragm was attached is entirely problematical.

There is no evidence that the armatures of the Ulrich tests were balanced by means of the projecting corners either before or during the Ulrich tests. Indeed it is admitted that Ulrich "did not know what the T-reed was for" (page 4 of Knowles' brief before the Court of Customs and Patent Appeals, certified along with the transcript of record). Thus as stated in *Triplett* v. *Steinmayer*, 29 CCPA 1243, 129 F.2d 869:

". . . there is nothing in the testimony to show that the successful operation of the . . . device was due to the invention here involved, or that the invention contributed in any way to the successful operation of the device."

Conflict of Decisions

The judgment in this case conflicts not only with the aforesaid cases in the Court of Customs and Patent Appeals but also with cases in other Federal courts of appeal. For example in *Henderson* v. *Gilpin*, 39 App. D.C. 428, the Court of Appeals of the District of Columbia held:

> It is not enough, as contended by appellant, that these shop tests indicated that the operation of the device would be successful. To constitute reduction to practice a test must amount to a demonstration in fact, as contradistinguished from one in theory.

In *Chicago Rawhide Mfg. Co.* v. *Victor Mfg. & Gasket Co.*, 78 F.2d 417, the Circuit Court of Appeals, Seventh Circuit, quoted the above on page 420 with approval.

Summary

If the judgment of the Court of Customs and Patent Appeals is allowed to stand, in holding that a laboratory test may be a reduction to practice even though the invention was not used under actual working conditions or under conditions closely simulating actual conditions, it will be in sharp conflict with well established law. At the most the tests merely showed that bending the corner of the armature could unbalance an armature which already had been balanced by the opposed pin technique and which had no diaphragm attached to it. Heretofore such laboratory tests have never been held to take the place of a reduction to practice notwithstanding . . .

> "the witnesses may have been fully convinced that the system would necessarily function properly in

actual operation and it may be that the information they possessed justified that belief" (Kear v. Roder).

In the present case the judgment of the Court of Customs and Patent Appeals is clearly based on a mere belief that the projecting corners of the armature would perform satisfactorily for magnetically balancing the armature:

> We think, however, that once Knowles established that tab adjustment provided reluctance adjustment and also that T-reeds operated in the same manner as normal reeds, he had sufficiently proved that the transducer would perform satisfactorily in its intended functional setting (page 10a).

In the present case one intended function of the invention was to rebalance an armature after it had been thrown off balance by attachment to a diaphragm, but Knowles merely used the projecting corners to unbalance an armature which was not attached to a diaphragm or anything else; and Ulrich did not use them at all. From the fact that a balanced armature unattached to anything can be thrown off balance by tab adjustment, it by no means follows that an armature can be rebalanced by tab adjustment after it has been thrown off balance by attachment to a diaphragm.

Another intended function was to permit "maximum signal-current amplitudes without distortion" of sound, but tests without a diaphragm could indicate nothing with respect to the fidelity of sound reproduction.

Question of General Public Interest

The question here involved of when an invention is "made" is a question of wide general interest which arises not only in the Patent Office but also in infringement suits

in the Federal courts throughout the country and in the U.S. Court of Claims. Therefore it is important that the question be settled by the Supreme Court, which has not ruled on the question since 1928. *(Corona Co.* v. *Dovan Corp.)*

Conclusion

This Petition for a Writ of Certiorari should be granted for the following reasons.

1. To resolve the aforesaid conflict of decisions.
2. To settle the following question of general public interest:

   Can an abstruse electroacoustic invention be reduced to practice without causing it to perform its intended function?

In the present case the intended functions were to obtain maximum sensitivity and high fidelity both of which require tests of the tabs with a diaphragm attached to the armature. Neither of these functions was demonstrated because Knowles used no diaphragm and therefore had no sound input or output, and Ulrich did not use tabs at all.

Respectfully submitted,

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Appendix A

OPINION OF THE COURT OF CUSTOMS AND PATENT APPEALS

June 24, 1965

ALMOND, Judge.

Hugh S. Knowles appeals from a decision of the Board of Patent Interferences awarding priority of invention to George C. Tibbetts. The interference is between two applications.[1] The board based its award of priority on its holding that the junior party, Knowles, had failed to prove a reduction to practice prior to the senior party's filing date.

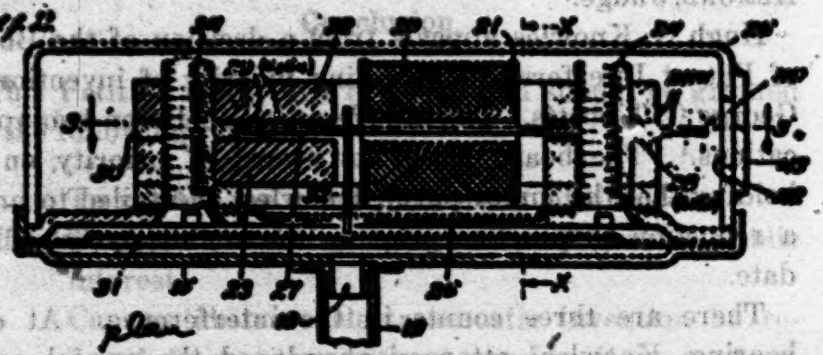
There are three counts in the interference. At oral hearing, Knowles' attorney abandoned the appeal as to count 1. We thus are concerned only with counts 2 and 3 which read as follows:

> 2. An electromagnetic transducer comprising a magnet, a pole piece flux-conductively engaging each pole of the magnet, said pole pieces extending laterally of the magnet to form a non-magnetic gap therebetween, an elongated flux-conductive, elastic armature, means clamping one end of said armature in non-magnetic, spaced relationship to the pole pieces in fixed position in said gap so that the other end of said armature may vibrate in another portion of said gap, there being a bending line between the clamped end and the vibratable end of the armature, and means for varying the reluctance between the pole pieces in the air gap at the fixed end of the armature.
>
> 3. The electromagnetic transducer of count 2 wherein the reluctance varying means is a T-shaped armature with the clamped portion between the arms of

[1] Tibbetts, serial No. 680,753 filed August 28, 1957 and Knowles, serial No. 730,082 filed April 22, 1958.

the T which project laterally on both sides into the gap.

It is clear from the applications in interference that the invention relates to a transducer of the type shown in Figure 2 of the Knowles application:

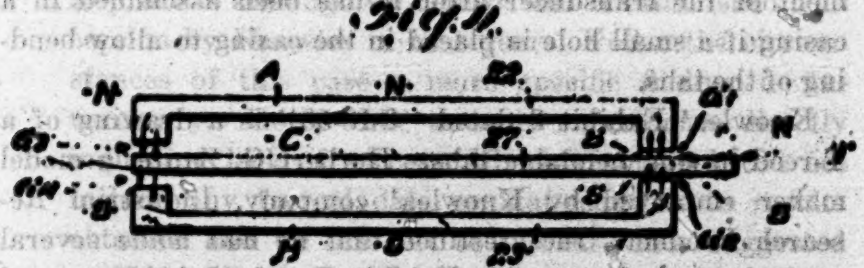


A reed 27 is clamped between washers 28W at one end and is free to vibrate at its other end. When used in a microphone to convert acoustic energy into mechanical energy, the reed is made to vibrate by diaphragm 31 and drive link 32. Vibration of the reed between magnetic poles 22 and 23 causes a variable magnetic flux in the reed. The variable flux causes a current to be set up in coil 20. This output electrical current from the coil varies with the input acoustical energy.

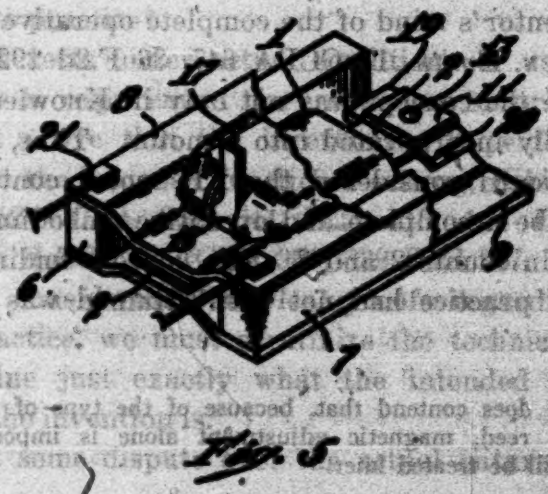
Reduction to Practice

An understanding of the problem solved by the invention is important in determining whether there was a reduction to practice. Both applications in interference indicate that two kinds of flux are normally present in the vibrating reed. There is a steady polarizing flux in the region of the gaps between the magnetic poles and a variable signal flux in other regions of the reed. It is desirable that the reed carry as little steady flux as possible in regions outside the

gaps. Knowles' Figure 4 represents a reed positioned between pole pieces:



According to Knowles, circulation of polarizing flux through the reed can be prevented by magnetically balancing the reed. Magnetic balance is obtained when the reluctance across each of the air gaps G_1, G_2, G_3, and G_4, represented as R_1, R_2, R_3 and R_4, is in the relationship $R_1/R_2 = R_3/R_4$. A reed may be balanced by simple mechanical centering or by bending adjustments which produce strains in the reed. The invention described by the applications in interference is another method for magnetically balancing the reed. Adjustable tabs 19 and 20 are provided to the fixed end of the reed as indicated by Tibbetts' Figure 5:



Magnetic balance is obtained by bending the tabs. An important feature of the invention is that it allows adjustment of the transducer after it has been assembled in a casing if a small hole is placed in the casing to allow bending of the tabs.

Knowles' Exhibit 3 dated "3-18-53" is a drawing of a T-reed having bendable tabs. Herbert G. Zapfe, a model maker employed by Knowles' company, Industrial Research Products, Inc., testified that he had made several reeds in accordance with Exhibit 3 and probably turned them over to Knowles about April 30, 1953. Edward R. Cronk, an engineer employed by Industrial, testified that the T-reeds were placed in magnetic armature type motors designated as model AH. The parties appear to be in agreement that these AH motors "incorporating the T-reed" satisfy counts 2 and 3.[2] There was testimony that these AH motors were tested to determine whether magnetic centering could be obtained by bending the tabs on the T-reeds and that the motors were assembled in microphones and tested acoustically by an engineer, Paul Ulrich. The board held that this activity carried out in 1953 established conception by Knowles but that it did not establish reduction to practice. Conception is the formation in the inventor's mind of the complete operative invention, *Townsend* v. *Smith*, 17 CCPA 647, 36 F.2d 292, 4 USPQ 269. Here the concept was not only in Knowles' mind, it was actually incorporated into a motor. Thus, it appears that the board considered the AH motor containing the T-reed to be a complete and operative embodiment of the invention in counts 2 and 3. The board's finding that reduction to practice had not been attained was expressed as follows:

[2] Tibbetts does contend that, because of the type of washer used to hold the reed, magnetic adjustment alone is impossible. This argument will be treated later.

As to the activity in 1953, we are of the opinion that the record does not demonstrate an actual reduction to practice although we believe that it established conception by Knowles in that year. Under the circumstances of this case a more specific finding is unnecessary. Here, while there is no evidence directly indicating lack of success, Ulrich's notebook did not include any factual data or statement as to results obtained and we are left to the inference suggested orally by Ulrich that the results must have been satisfactory or some contrary note would have been made. We decline to draw that inference where other circumstances pointing in that direction are absent and where the failure to adopt the proposal or to file an application are circumstances which tend to indicate the contrary.

This vague statement by the board appears to indicate that only the acoustical tests by Ulrich were considered in determining reduction to practice. This brings us to the nub of the problem. We find, as apparently the board did, that an operable transducer satisfying the counts was made in 1953. The legal question we must determine is, what proof of testing of this motor is required to establish reduction to practice?

Although tests under actual conditions of use are not necessarily a requirement for reduction to practice, the tests must prove that the invention will perform satisfactorily in the intended functional setting, *White* v. *Lemmerman*, 52 CCPA 968, 341 F.2d 110, 144 USPQ and *Paivinen* v. *Sands*, 52 CCPA 906, 339 F.2d 217, 144 USPQ 1. Before considering Knowles' proofs regarding reduction to practice, we must scrutinize the technical aspects to determine just exactly what the intended functional setting of the invention is.

There is some dispute over the actual nature and pur-

pose of the invention. Knowles contends that the invention is a transducer or in simpler terms merely a motor which has a wide variety of applications and need only run to prove reduction to practice. Tibbetts, on the other hand, apparently takes the position that the primary utility of the invention is in a microphone or receiver and would require actual service tests in a hearing aid. The Knowles application states:

> This invention pertains to the provision of improvements in electromagnetic devices such as transducers employing an armature movable relative to polarized pole pieces, and more particularly, but not exclusively, to that class of transducers used as receivers and microphones in hearing aids, and the like, in which the armature may be a long thin magnetic reed reacting relative to pole pieces conducting the main polarizing flux.

The entire invention, however, is directed to problems encountered in miniaturized equipment. Knowles states that magnetic balancing is "important in receivers where the alternating signal flux in the pole pieces becomes an appreciable portion of the steady polarizing flux." Tibbetts, in his application, describes the problem as follows:

> As the size of certain types of transducer assemblies is reduced, e.g. microphones, the sensitivity also tends to reduce. One of the important means of maintaining sufficiently high sensitivity of such magnetic transducers is to employ a magnetic instability factor as high as practicable. Hence the problem of obtaining a sufficiently low steady flux density in the armature of moving armature magnetic transducers is greatly accentuated by the process of miniaturization.
>
> The principal object of my invention is to provide means in a balanced armature magnetic translator for adjusting accurately and permanently the mag-

netic state of the armature and hence of obtaining as close an approximation to magnetic balance as may be desired.

The gist of the invention then appears to be magnetically balancing miniaturized transducers, and this balancing is necessary when the transducers are used in miscrophones and receivers. There seems to be no doubt that a miniaturized transducer was made; Herbert Zapfe made the T-reeds which were made up into modified AH motors according to the testimony of Cronk. There is further evidence that bending the tabs resulted in "varying the reluctance between the pole pieces in the air gap at the fixed end of the armature" as called for by the count. Knowles testified that he bent the tabs and measured the shift in magnetic balance obtained by a laboratory test setup. Cronk corroborated, stating that he had seen Knowles make the magnetic centering tests and had made them himself. Tibbetts questions whether a satisfactory reluctance adjustment was achieved. Tibbetts first points to Knowles' Exbibit 15, a progress report allegedly made by Cronk in 1954. Cronk's testimony with regard to this report was:

> Q259. Will you read into the record your comment on this bent tail reed No. 3? A. "Bent tail reed tried. Very little effect caused by tail. Probably because permeance of tail clamp section. Could cause total shift of pattern of less than 1/16th inch under any condition of tail coupling."
>
> Q260. What were you after when you were testing this particular bent tail reed? A. Primarily we were after a very large gross effect to operate as a volume control rather than as a touch-up adjustment, as we call it.
>
> Q261. Was this pure reluctance? A. Yes, this was

definitely pure reluctance because it was completely isolated by the clamp from the balance of the reed.

Q262. Does the report you have there show that the reluctance adjustment did occur? A. Yes. In fact I think the wording here as I read this thing is in matter of concept. In other words, it says very little but this is only in terms of what we were trying to get, rather than what it actually did. I would say the amount talked about here was probably adequate for most production readjustment procedures.

We first note that a bent tail reed rather than the T-reed involved in the 1953 test was being discussed. Furthermore, Cronk states that some reluctance adjustment was obtained.

Tibbetts also argues that unless the tab adjustment can be made without introducing stresses in the vibratory portion of the reed, the results are unsatisfactory because of mechanical instability of the reed. We do not feel that he has pointed to any persuasive evidence which would indicate that mechanical stresses had been introduced during the 1953 tests. He cites testimony by Cronk indicating that both mechanical and reluctance adjustments were obtained but that testimony dealt with a "pitchfork" reed designed to give both types of adjustment.

We thus conclude that Knowles made a miniaturized transducer and tested to establish that reluctance could be varied by manipulation of tabs on the T-reed.

The next step by Knowles was to have acoustical tests performed on a microphone containing a T-reed transducer. It is not clear from the record just what Knowles hoped to learn from the acoustical tests. Ulrich, at Knowles' request, placed the T-reed transducers in microphones and ran acoustical tests to determine sensitivity as a result of frequential volume. The results of these tests were expressed by curves. The test was apparently a standard

practice. Ulrich's notebook, Exhibits 9-12, covers a period from "7/7/53" to "10/15/53" and "Curve #441" through "Curve #661." Two of the entries are:

7/22/53

* * *

Curve #448
flat drive pin
wide base reed 3/16"

and

12/11/53

Curve #649
production motor except 3/16"
reed

* * *

Curve #652
same as #649 except 1/8" reed
with 5/32" width @ pole faces

With regard to these tests, Ulrich testified:

RDQ15. Mr. Ulrich, were these microphones satisfactory microphones? A. Apparently they were or I would have made some note.

RDQ16. You would have made some note that they were not? A. That they were * * * unsatisfactory.

The curves are not in the record. Knowles testified that he saw the curves run on the T-reed transducers and was satisfied that "sensitivity was up to par." Cronk testified:

Q226. What tests did Mr. Ulrich make on finished acoustic models? A. He ran a finished acoustic response test.

Q227. Which would be shown by some kind of curve? A. Which would be sensitivity versus frequential volume, yes.

* * *

Q229. Did the curve show that the microphones equipped with that T reed would work acoustically?

A. Yes, once they were in the acoustic state they were indistinguishable from any other reed.

It was these acoustical tests alone which the board seemed to consider in holding that there was no reduction to practice. In its original opinion, the board stated that Ulrich's testimony and notebook failed to indicate success of the acoustical tests. On reconsideration, the board criticized Cronk's corroboration of the Ulrich test results because "the testimony does not show that Cronk recalled the nature of the tests." We would agree that Ulrich's testimony is of little value as to success of the acoustical tests. We think, however, that Cronk corroborated Knowles' testimony of success. In view of the large number of sensitivity tests run by Ulrich, the curves from which were all delivered to Cronk, we think that Cronk must have known the nature of the test.

Tibbetts argues that the short acoustical test which indicated that the operation of the T-reeds was acoustically indistinguishable from normal reeds is merely a laboratory test insufficient to establish reduction to practice because it didn't prove whether tab adjustment introduced mechanical strains or whether it would be affected by conditions of "temperature, vibration etc. in normal usage in a hearing aid." We think, however, that once Knowles established that tab adjustment provided reluctance adjustment and also that T-reeds operated in the same manner as normal reeds, he had sufficiently proved that the transducer would perform satisfactorily in its intended functional setting.

Tibbetts points to the fact that Knowles did not file a patent application until almost five years after the 1953 reduction to practice as evidence that reduction to practice was not actually established. It is true that a long delay in filing has been held to warrant the presumption that experiments alleged to be a reduction to practice were

actually unsuccessful. See *Conner* v. *Joris*, 44 CCPA 772, 241 F.2d 944, 113 USPQ 56; *Stewart* v. *Robinson*, 19 CCPA 953, 55 F.2d 998, 12 USPQ 218 and *Globe-Union, Inc.* v. *Chicago Tel. Supply Co.*, 103 F.2d 722, 41 USPQ 366 (7th Cir. 1939). However, in a case like this where we are convinced that there was a reduction to practice, we will not hold otherwise because of the delay. To do so would result in a double standard in an area where the standard is already elusive. We thus *reverse* the board's holding that there was no reduction to practice by Knowles in 1953.

Loss of Right to Patent Under 35 USC 102(g)

Having held that there was no reduction to practice, the board did not consider whether Knowles had abandoned, suppressed or concealed his invention from the time of reduction to practice in the latter part of 1953 until his filing date of April 22, 1958. Tibbetts has raised that issue throughout the interference and it must be decided. We thus *remand* for consideration of the 35 USC 102(g) issue.